Mapping the landscape of online job vacancies

Background report: Denmark

Study: Real–time labour market information on skills requirements: Setting up the EU system for online vacancy analysis
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Preface

Over the last decades, online job portals have become important features of the job market. The Internet offers a rich source of live and real-time labour market information for almost all of occupations. It can provide insight on job-specific skills required in particular occupations in different regions, combined with information on the characteristics of the job offered – i.e. much more than is available using conventional sources. However, consistent and comparative information on the use of the internet and online job market by job-seekers and employers in Europe is rather scarce.

To tap the potential of online labour market information, Cedefop started to investigate the possibility to develop a system for gathering and analysing data from online job portals in the EU to complement the centre's toolkit of skills intelligence instruments. While this is feasible, drawing meaningful conclusions from these data requires a good understanding of the features of national online job markets. Therefore, Cedefop has mapped the landscape of the online job market in all EU Member States. This publication presents one of the background country reports developed in the project - 'Real–time labour market information on skills requirements: Setting up the EU system for online vacancy analysis' (AO/DSL/VKVET-GRUSSO/Real–time LMI 2/009/16). Its findings will inform the cross country comparison published in the upcoming synthesis report.

The work was undertaken by a consortium of external contractors: CRISP (Milano/IT), Tabulaex (Milano/IT) and IWAK (Frankfurt/DE) and their network of country experts (see annex 1 for detailed list) and closely supervised by Cedefop. It presents authors' analysis of the landscape of the online job portal market in the country using a methodology developed for the purpose of the project.

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List of Abbreviations

Cedefop	**European Centre for the Development of Vocational Training**
CRISP	CRISP (Centro di ricerca interuniversitario per i servizi di pubblica utilità, University of Milano-Bicocca)
EURES	European Employment Services
HR	Human Resources
ICT	Information and Communication Technology
IWAK	Institute for Economics, Labour and Culture/Centre of Goethe University Frankfurt
OJVs	Online Job Vacancies
PES	Public Employment Services
STAR	Danish Agency for Labour Market and Recruitment (Styrelsen for Arbejdsmarked og Rekruttering)
WP	Work Package

Introduction

With the project "Real-time Labour Market Information on Skill Requirements: Setting up the EU System for Online Vacancy Analysis", Cedefop explores online job-vacancies (OJVs) as a new source of real-time Labour Market Information. By crawling the most important online job-portals of the 28 EU Member States, Cedefop will further its understanding of the changing skills demand in different sectors and occupations. A systematic overview of the online job-portal landscape in each of the 28 EU Member States will identify the most relevant online job-portals and provide context for the data scraped from them. With the Landscaping Activity, Cedefop seeks to acquire insights into the structure of online job-portal markets and the extent to which online job-portals are used in recruitment and job-search. Furthermore, it aims to better understand which factors cause variation in the formats and content of OJVs in different countries.

This Country Report was compiled between April and October 2017 and constitutes a first overview of the online job-portal landscape in Denmark. It is based on desk research of available data sources in Denmark (e.g. public data, academic research and publications of interest groups) and expert opinions. Chapter 1 describes the methodology used for compiling the report in terms of the relevant search paths and data sources. Chapter 2 gives an overview of the main drivers for the use of online job-portals in recruitment and job-search, while Chapter 3 concentrates on the characteristics of the online job-portal market and lists the most important players. Moreover, it seeks to understand to what extent OJVs published on the online job-portals provide adequate information on the developments in the Danish labour market in terms of the number of vacancies and representation of sectors/occupations. Furthermore, it elaborates on the legal and regulatory framework guiding the activities of the job-portal owners and employers, highlights the differences between the public versus private online job-portals and delineates their relationships with one another. Chapter 4 covers the use of online job-portals in recruitment and job-search. It focuses on the differences in the behaviour of employers and job-seekers across sectors, occupations, qualification levels and regions. Chapter 5 presents the most important online job-portals in Denmark for web-crawling and describes a step by step process of the OJV drafting and posting on select private and public online job-portals. Chapter 6 concludes the Country Report by describing the main features of OJVs in Denmark in terms of format and content. In particular, it explores to what extent OJVs contain information pertaining to hard and soft skills required for the job, how these skills are characterised and what they reveal about the nature of the job.

1. Methodology

There is a general lack of knowledge and evidence regarding the demand-side and the competencies that employers request from their employees (Bredgaard 2017).

The following describes and assesses the role of Online Job Vacancies (OJV) in recruitment and job search on the Danish job market. Different sources of information were used, including available literature, evaluations and surveys on the use of online job-portals, webpages of private and public online portals and expert interviews. The findings indicate that the Danish job market is relatively well functioning and that OJVs are the primary channel for recruitment and job search, but the importance of social media is increasing.

1.1.　Search Paths

The desk research was carried out in August 2017. A literature review was carried out and supplemented with internet searches among the main online job-portals (Jobindex, jobnet, ofir) as well as with Google searches.

1.2.　Data Sources

Four surveys on job search and recruitment methods were found (see Table 1) and are generally considered a reliable source of information. Even the surveys conducted by the private job-portal owners are a valid and reliable source of information (see for instance the Ballisager survey reported below).

Four interviews were carried out with national experts. The respondents represent the national statistical agency, the national agency for labour market and recruitment, the largest private provider of online job vacancies and The Confederation of Danish Enterprises[1]. Each respondent was selected for the interviews, because they are the experts in their organisations and specifically on the subject of the online job market. They provided a comprehensive and accurate description of the Danish online job market. There are no major gaps in the information given by the experts.

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[1] In Danish "Danske Erhverv"

Table 1: Overview of the different sources used in the landscaping activity

Type of source	Title/year	Provider	Information on			Quality
			Share of existing vacancies on online job-portals (PES/private)	Use of OJVs per sector/occupation/qualification level/ region	Skills requirements in OJVs	
Source 1: **Public data/academic research**	Halkjær, J. L./Bredgaard, T. (2016): Arbejdsgiverne og flexicurity [Employers and flexicurity]. In: Bredgaard, T./Madsen P.K. (Eds.): Dansk flexicurity – fleksibilitet og sikkerhed på arbejdsmarkedet, Hans Reitzels forlag		Yes			Very good
	Larsen, C. A./Pedersen, J. J. (2009): Ledighedsparadokset – Information, netværk og selektion på arbejdsmarkedet [The unemployment paradox – Information, network and selection on the labour market], Frydenlund Academic		Yes			Very good
Source 2: **Research/surveys of interest groups**	Ballisager (2016):"Rekrutteringsanalysen 2016, [Recruitment Analysis 2016]	Ballisager (private recruitment company)	Yes	Yes		Good
	Rambøll (2016): Kortlægning af jobmatch – Sammenfattende rapport [Mapping Out Job Matches], Rambøll Management Consulting for The Danish Agency for the Labour Market and Recruitment (STAR).	Rambøll (private consultancy company)	Yes	Yes	Yes	Good
Source 3: **Expert opinions**	Expert opinions 2017	E1-4	Yes	Yes	Yes	Very good

Source: Bredgaard (2017).

2. Labour Market Dynamics and Impact on the Online Job-portal Market

The three most important drivers of change on the Danish online job market are (1) the high level of Internet penetration and usage, (2) growing labour demand and skills shortages, (3) increasing importance of online job databases in recruitment and job search.

There is a high level of **internet access and usage** in Denmark, which also means that online job search and recruitment is accessible and widespread. Almost 95% of Danish households have access to the Internet, and the share of individuals who have never used the Internet is close to zero. Moreover, the Internet is often used for job searches or sending an application. Around 75% of the respondents in Denmark use the Internet for job searches or sending an application, which is significantly higher than the average of about 50% in the EU-28. EU-data, furthermore, show that Danish enterprises are much more likely to use their websites to announce vacant positions than enterprises in other EU-countries. In the most recent Eurostat Survey on Websites and Functionalities (2016), 47% of the websites of Danish enterprises provided advertisements of open job positions or online job applications compared to 27% in the EU-28. Similarly, Danish companies are more likely to use social media to recruit employees than companies in other parts of the European Union. For instance, more than 60% of the large enterprises in Denmark use social media to recruit employees compared to about 40% in the EU-28.[2]

Growing labour demand and skill shortages: The Danish labour market is very dynamic, with high levels of voluntary job mobility. Since 2013, job turnover has increased. Currently 800,000 people start a new job annually (about 30% of the total number of jobs). The share of newly employed among total employment in Denmark (approximately 25%) is also above the European average (approximately 15%). With the growing labour demand and declining unemployment, Danish companies currently report skill shortages in specific occupations. Among the companies that have recruited new employees in the spring of 2017 (30% of all Danish companies), the majority managed to fill the position with a qualified candidate. However, 6% of companies looking to recruit reported challenges finding a person with the necessary qualifications for the role. Of the 6% of vacancies, 15,400 positions went unfilled, or 0.6% of total employment.[3] The type of occupations which experience the most unsuccessful recruitment are sales assistants, carpenters, electricians, bricklayers, IT-programmers and system developers. The sectors which had the most unsuccessful recruitment were construction (12% of vacancies were unable to be filled), followed by hotels and restaurants, knowledge services, ICT, and industry (8% of vacancies in all sectors were unable to be filled) (Board of Labour Recruitment 2017).

Increasing importance of online job-portals in recruitment and job search: The dominant recruitment and job search instrument for Danish companies and job-seekers are private and public online job-portals. Surveys on the preferences and behaviour of job-seekers and employers confirm the importance of job-portals. Informal contacts and networks also play an important role on

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[2] The data in this section refers to the statistical information from different EU sources, which has been collected and provided by Cedefop.

[3] Since 2007, the Danish Agency for Labour Market and Recruitment (www.star.dk) has commissioned biannual surveys to examine the recruitment situation and challenges of Danish public and private companies.

the Danish labour market, and the role of social media (e.g. LinkedIn and Facebook) is increasing (cf. Ballisager, 2016; Rambøll, 2016).

3. Context and Characteristics of the Online Job-portal Market

3.1. PES Online Job-portal(s)

There are few public regulations to restrict the behaviour of online job-portal. The relevant regulations include mandatory use of the public online job database for unemployed job-seekers, and EU-regulations to avoid discrimination.

- Unemployed job-seekers have to register on the public job database (Jobnet.dk) and upload and maintain their CVs. The Public Employment Service (local jobcentres) can impose sanctions if unemployed persons do not comply with the regulations.
- EU-regulations on anti-discrimination of specific groups also apply in Denmark. It is illegal to discriminate against certain groups on the labour market (e.g. based on ethnicity, religion, sexual orientation, age, handicap, etc.). Therefore, online job announcements must avoid discriminatory language and preferences. This means that it is illegal (unless objectively justified) to select or eliminate a candidate on the basis of race, religion, faith, political or sexual orientation, ethnicity, age, handicap etc. The burden of proof lies with the company, and violators can be fined (Law no. 1489 dated 23/12-2014, §2).

Jobnet.dk is the public online job-portal of the public employment service (PES). The Ministry of Employment, in partnership with the Local Government Association, launched Jobnet in 2003. Jobnet consists of a job vacancy and CV database and aims at matching labour demand and labour supply. Jobnet has about 2 million visitors each month. It is free of charge for employers to place job vacancies on Jobnet and search in the CV-database. The employers can search for specific skills or qualifications among candidates on Jobnet. If the employer does not find the right candidate, they save the search criteria and receive a notification when a CV for a matching candidate is uploaded on Jobnet. Apart from unique job vacancies posted by employers on the webpage, Jobnet also crawls other Danish job-portals and company websites. Figure 1 shows the average number of posted vacancies on Jobnet.dk per day from 2004 to 2016.

Figure 1: Average number of vacancies per day on Jobnet.dk
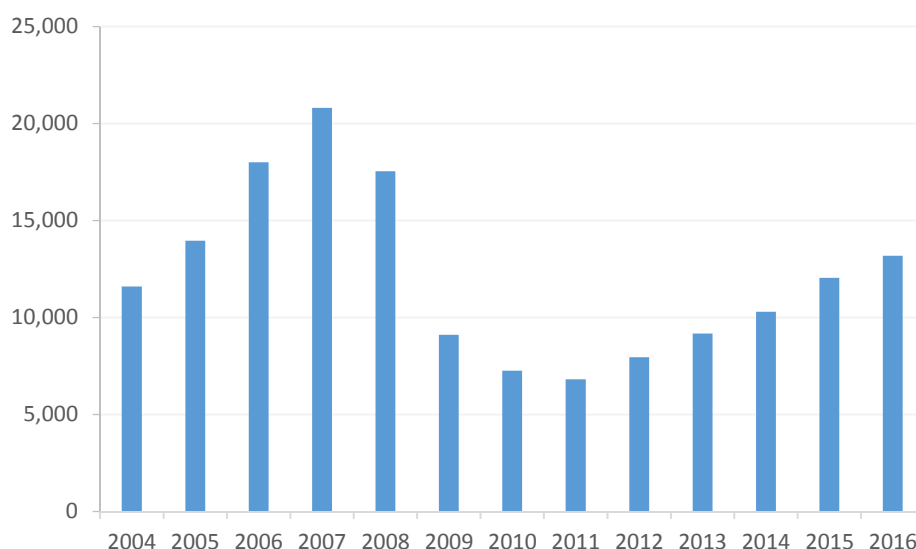
Source: www.jobindsats.dk.

The number of vacancies peaked in 2007 and declined as unemployment started to rise with the economic recession in 2008. After 2011, the number of vacancies has again been on the rise. In 2016, the average number of daily vacancies was 13,180. By comparison, there are 150,000 active CVs for job-seekers on Jobnet, which means that the ratio of vacancies to CVs is currently about 1:11. According to the Board of Labour and Recruitment's semi-annual survey, 11% of employers used the PES (online and offline services) for recruitment in the spring of 2017, while, as previously mentioned, 30% of all employers in Denmark had recruitment needs in the spring of 2017. Of the employers who use the PES to recruit, 26% are involved in the retail trade sector, followed by construction (11%) and industry (10%). However, the satisfaction with the PES is highest among the healthcare sector employers, where most jobs are successfully filled, and lowest in the construction sector, where the PES often struggles to fill vacancies (Board for Labour Market and Recruitment 2018).

As noted, it is mandatory for unemployed job-seekers to use Jobnet for job search activities. In practice, this requires the following activities from unemployed persons:
- They have to report that they are unemployed by registering themselves as users of Jobnet;
- They must maintain an active and updated CV on Jobnet;
- They must check job proposals on Jobnet at least once a week and document the weekly job search activities in a "joblog" [4] on "My page" on Jobnet.

If unemployed job-seekers do not comply with the obligations, the local job centres may apply sanctions (e.g. withdrawal of benefits for a specified period or until the job-seeker complies).

The Ministry of Employment also operates the online database **Workindenmark.dk,** which supports Danish companies in recruiting high-skilled foreign labour. Workindenmark is the official Danish website for international recruitment and job-seeking. Employers can create job vacancies, search for foreign manpower in the CV-database and find relevant information about recruiting

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[4] Joblog is a combined journal and calendar – a place where the job-seeker has to register all job-seeking activities they have undertaken, and plan future job-seeking activity.

employees from abroad. Foreign jobseekers can search for jobs in Denmark in the database, add their CV to the CV-database and find relevant information about working in Denmark. Workindenmark has about 1,000 vacancies on a daily basis. There is a strong focus on jobs facing high-skilled workforce shortages, motivating employers to look outside of Denmark. The portal notes that it focuses on recruiting candidates in IT, life sciences, medical and health services and engineering. There are also three Workindenmark centres, where employers can get recruitment assistance from counsellors.

EURES has a small job-portal for Danish job-seekers searching jobs abroad (www.eures.dk). Foreign employers that search for Danish job-seekers are advised to contact the local EURES advisers (36 in total, who are mainly employed by Workindenmark.dk). The Danish EURES job-portal announces a very small number of jobs, for instance only 206 jobs when the homepage was last visited on 25 August 2017. The majority of the vacant jobs were posted by the neighbouring countries or English-speaking countries (e.g. Norway – 70 jobs, Germany – 31 jobs, Great Britain – 18 jobs, Sweden – 9 jobs and Ireland – 9 jobs). These foreign vacancies tend to be au-pair jobs and jobs where Danish language skills are required. The Danish homepage links to the European EURES homepage as well as the Danish Jobnet.dk.

The Danish Agency for Labour Market and Recruitment (STAR) recently launched a project with objectives that are very similar to the current Cedefop project. In June 2017, STAR announced a call for tender on a so-called "dynamic concept on competencies". The objective is to use online job announcements to establish new "clusters" of competencies across occupations and industries. Data analysis should make it possible to analyse, for example, changes in the demand for different types of competencies, the parts of the labour market that require specific competencies and how quickly new competence needs are emerging. The preliminary results of the project were published in a report in November 2017, and the final report is expected in early 2018. The project builds on the lessons from a pilot-study in two sectors of the industry (ICT-industry and the iron/metal and auto industry), in which textual analysis of job vacancies was carried out.[5] The mid-term report indicates a shift in the competencies requested by employers in online-job advertisements. The report compares that competencies described in online job advertisements in 2011 with the competencies requested in 2016. Broken down on specific occupations, the report indicates that employers within metal and machine industry request higher basic qualifications (reading, writing, arithmetic and communication), technical and system qualifications (like quality control, process optimization and risk management) (Midterm report, November 2017, link to report in Danish).

3.2. Private Online Job-portals

Jobindex.dk is the largest private online job vacancy database. Jobindex.dk currently hosts about 20,000 job vacancies on a daily basis, has 100,000 CV's in its database and serves 700,000 unique users a month. Jobindex was founded in 1996. It became one of the first actors on the Danish online job market. In the early 2000s, the Norwegian job search engine "Stepstone" dominated the Danish market, but it was purchased in 2014 by Jobindex, which became the market leader. Jobindex cooperates with Jobnet (the public online job portal), which means that all job vacancies from Jobnet are also in the database of Jobindex. There are minor differences in that Jobindex may announce both specific vacancies as well as general roles that do not represent specific available vacancies, allowing employers to develop candidate pools, whereas Jobnet only announces specific vacancies. Jobindex also has cooperation agreements with other private job-portals. Approximately 50% of the job vacancies on Jobindex were directly posted to the portal,

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[5] For further information contact: Peter Truels Nielsen, Head of office "Viden og Analyse" (STAR).

while about 30% come from Jobnet/Job centres, 20% come from other job-portals and a few come from company webpages.

Ofir.dk is also a private online job vacancy database. Like Jobindex.dk, Ofir.dk was also founded in 1996 and began as an online job-portal for a Sunday newspaper (Søndagsavisen). Ofir.dk is part of the North Media group. Currently, the number of job vacancies posted on Ofir.dk is a bit smaller than Jobindex.dk (about 12,000 daily job ads and 18,000 job vacancies). Apart from posting online job vacancies, Ofir.dk provides specialised services for job-seekers and employers, such as career and CV guidance, online job agents and recruitment services. According to the ofir.dk homepage, the most jobs are posted in the social & health industry, followed by production, crafts & transportation, and sales, marketing & communication.

3.3.   Co-operation between Public and Private Online Job-portals

The public and private job-portals have a cooperation agreement to share vacancies. Job ads from Jobnet are also available on Jobindex and Ofir.

3.4.   Role of other Recruitment and Job-search Channels

A large-scale study of the Danish job market was published in 2016 by Rambøll Management and commissioned by the Danish Agency for Labour Market and Recruitment (STAR[6]) (Rambøll 2016). The objective of the study was to examine the use of different channels for job search and recruitment by job-seekers and employers and to assess each channel's effectiveness in mediating job matches. The study developed a comprehensive dataset consisting of large surveys filled out by companies and job-seekers, administrative register data and interviews with HR personnel in companies and other stakeholders. The general conclusion of the report is that the Danish job market is relatively well functioning:

> "*The [Danish] job market is relative well-functioning in relation to the efficiency and quality of job matches. This is shown by a generally healthy market for job search channels in which market-based and public channels supplement each other in a constructive manner. There are, however, potentials for even more effective job matches, for instance through better information sharing between platforms and a better division of labour between market-based and public channels*" (Rambøll, 2016: 7).

The study not only measures the uses of different channels for job search and recruitment, but also their efficiency in creating a successful job match. Efficiency is measured statistically as the correlation between the use of a given channel (survey data) and the outcome (register data on job matches). Table 2 shows the use and efficiency of different formal and informal search channels.

Table 2: Use and efficiency of different formal and informal search channels

	Use[7]		Efficiency	
	Companies	Jobseekers	Companies	Jobseekers
Company's own homepage	0.25	0.13	39%	38%

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[6] In Danish "Styrelsen for Arbejdsmarked og Rekruttering".
[7] The "use" is the average number of times that the channel is used for each new recruitment.

Company's intranet	0.08	-	51%	-
Direct contact by company	0.07	0.09	45%	63%
Jobnet.dk	**0.23**	**0.51**	**34%**	**25%**
Jobcenter	0.07	0.11	19%	30%
Other job search data bases	**0.30**	**0.60**	**33%**	**35%**
Recruitment companies	0.06	0.06	27%	41%
Temp. agencies	0.01	0.07	39%	31%
Unemployment insurance funds or trade union	0.01	0.08	22%	35%
Printed newspapers	0.05	0.07	37%	33%
Printed periodicals	0.02	0.04	27%	46%
Free weekly magazines	0.02	0.05	49%	30%
Public noticeboards	0.03	0.03	38%	36%
Social media	**0.12**	**0.19**	**31%**	**45%**
Personal contacts	0.28	0.45	54%	51%

Source: Rambøll (2016: 16).

The data confirms that recruitment and job search has gone primarily online in Denmark. Companies and job-seekers frequently use online job search databases. Among employers, Jobnet is used in 23% of recruitment needs, and other job search databases are used in 30% of the recruitment needs. Among job-seekers, Jobnet is used in 51% of job searches, and other job search databases are used in 60% of job searches. Companies and jobs seekers are also quite frequent users of other online channels (e.g. company's own homepage and social media). Finally, the data shows that companies and job-seekers are less frequent users of printed media and formal recruitment organisations (i.e. job centres, recruitment companies, temp. agencies and unemployment insurance funds/trade unions).

The data on the efficiency of job matches also show interesting patterns. The most efficient recruitment channel for companies is personal contacts; 54% of personal contacts lead to a successful job match. The next most efficient channel is direct contact by the company (45% job match) followed by a company's own intranet (51% job match). These are exclusive channels, which are not accessible to all job-seekers. The non-exclusive channels, like online job search databases (Jobnet and other job search databases) are effective in providing a successful job match in about one in three cases (34% and 33%, respectively).

Direct contacts are also the most efficient channel for job-seekers; the success rate is 63% if the company contacts the job-seeker and 51% if the job-seekers personally contacts the company. Online job searches are not as effective for job-seekers, especially not Jobnet (25% success rate), which may be due to its less frequent use by companies. Social media platforms, on the other hand, are quite effective for job-seekers, even though employers less frequently use them.

There are important occupational differences in the use of different channels. The occupational areas that are most likely to use informal recruitment channels (personal contacts), are occupations within the primary sector (e.g. agriculture, forestry, fishery etc.) and secondary occupations (e.g. the building and construction sector). Formal recruitment channels, such as online job-portals, are more likely to be used to recruit for tertiary occupations (e.g. academic and management positions, office work, and education).

There are also specific sectors where OJVs are seldom used, such as the building industry and agriculture. Furthermore, OJVs are comparatively unfrequently used in positions requiring only low

skills levels. In these cases, less than 10% of vacancies are announced on online job-portals compared to 30% announcement rate among all job categories. Figure 2 shows the use of online job-portals by types of jobs.

Figure 2: Percentage of jobs where online job-portals were used for recruitment
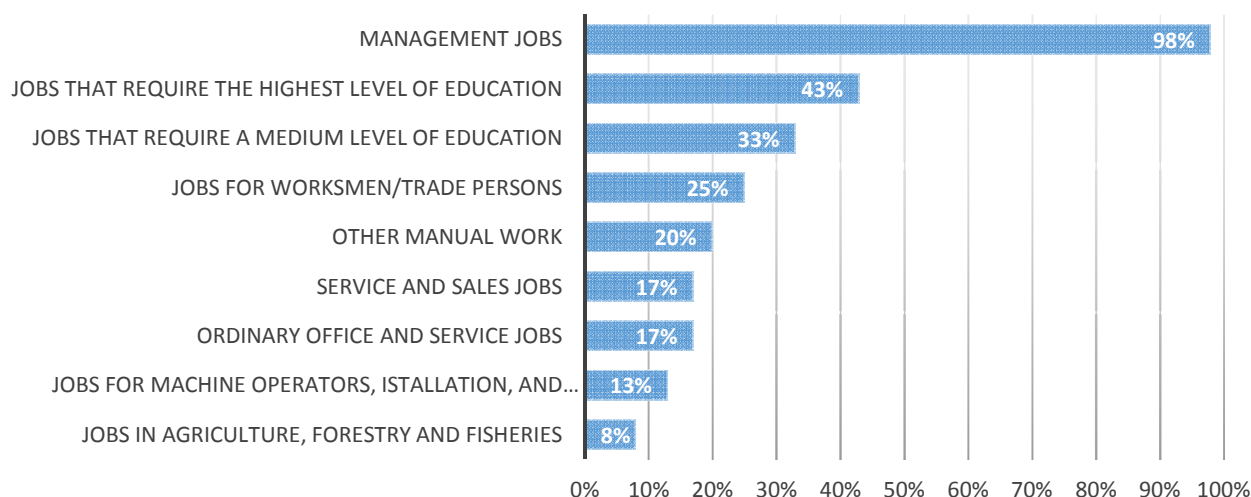
Source: Powerpoint presentation from Højbjerre Brauer Schultz based on a feasibility study commissioned by STAR (dated 27 January 2017). The data are from Jobnet, crawled Jobnet data and register data from the period January-September 2015.

Online job-portals are almost always used for management jobs (98%) and quite often for jobs that require higher skills (43%).

3.5.   Expected Trends in the Online Job-portal Market

The expert from the Confederation of Danish Enterprises[8] expects that the market share of online job databases will decline in the coming years due to competition from alternative recruitment channels. He referred specifically to three other sources of recruitment for companies: (1) social media, (2) Google for Jobs and Facebook Jobs and (3) apps mediating freelance jobs and assignments. The business community will select the recruitment channel that produces the maximum number of qualified candidates for the job and cost-efficiency (i.e. the lowest cost and highest efficiency to find the right candidate).

The representative of the private online job-portal mentioned the following trends in the market in the coming years: (1) Competition intensifies as social media (LinkedIn and Facebook) and global internet search engines (Google) become more active. This also implies that data on job-seekers and companies become more transparent, accessible and open. (2) Companies may find it easier to do recruitment without the assistance of recruitment and online job companies, as information on job-seekers is accessible on social media. (3) Traditional online job companies may become redundant unless they innovate their services and combine core services with supplementary services.

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[8] In Danish "Danske Erhverv".

4. Use of OJVs in Recruitment and Job Search

Research show that job databases on the Internet are among the most important recruitment channels for Danish employers. In a company survey from 2013, Bredgaard et al. (2016) found that employers are more likely to use job search databases than other means to recruit new employees (cf. Table 3).

Table 3: How often does your company recruit new employees through the following measures (all values in %)?

	Always	Often	Sometimes	Seldom	Never	Total
Unemployment insurance funds or trade unions	1	1	7	15	76	**100**
Jobcentres	2	5	18	25	50	**100**
Private job brokers	3	7	12	17	61	**100**
Jobnet.dk	10	10	17	15	48	**100**
Other job search data bases on the Internet	10	14	19	14	44	**100**

Source: Halkjær and Bredgaard, 2016: 197 [only includes responses from the 72% of employers that have recruited a new employee within the last year].

The company survey does not include informal recruitment channels, but it shows that employers prefer to use private and public online databases rather than formal institutions like job centres, private job brokers or unemployment insurance funds.

This finding is confirmed by another survey, which did include informal recruitment channels. Larsen and Pedersen (2009) compare the use of different recruitment channels (see Table 4).

Table 4: Which channels do you use to announce for new employees (all values in %)?

	Always	Often	Seldom	Never	Do not know	Total
Job databases on the internet	20	46	19	14	1	**100**
Newspaper ads	12	52	29	7	1	**100**
"Word of mouth" via employees	16	46	32	4	1	**100**
"Word of mouth" via business contacts	10	32	43	14	2	**100**
Direct contact to applicants on waiting list or unannounced applicants	4	27	53	15	2	**100**
Public employment service/jobcentres	6	24	37	32	1	**100**
Direct contact to former employees	3	16	55	24	2	**100**

Source: Larsen and Pedersen (2009: 44). Data from a Danish survey of private companies from 2006.

Larsen and Pedersen also found that the most popular channel for announcing vacant positions among Danish employers was job databases on the Internet. Two-thirds of all companies always or often used job databases on the Internet (66% in total). At that time, about two-thirds of employers always or often used newspaper ads (64% in total) and "word of mouth" via employees (62% in

total). Since then, the use of newspaper ads has declined as companies increasingly use online services and social media (see below).

In their annual recruitment analysis, Ballisager (a private Danish recruitment company) examined the type of channels Danish companies use for recruitment, including social media. In the most recent survey, Ballisager found that posted vacancies, networks and LinkedIn were the most commonly used recruitment channels by Danish employers.

Table 5: What type of channels did you [private and public Danish employers] use for the last recruitment you made? (more than one answer possible)

Posted vacancy (e.g. newspaper ads, job-portals)	69 %
Network	58 %
LinkedIn	42 %
Unannounced job applications	29 %
Internal candidates from the company	22 %
Facebook	20 %
Temp agency or recruitment company	19 %
Public employment service	19 %
External CV-databases (e.g. jobnet or Jobindex)	9 %

Source: Ballisager (2016).

The survey shows that only 9% of Danish employers used external CV-databases during their most recent recruitment. However, online job vacancy databases are also included in the category "posted vacancy" (job-portals). Interestingly, the survey indicates that the use of external databases is declining (from 21% in 2013 to 9% in 2016), while the use of social media is rapidly increasing. As of 2016, 42% of employers used LinkedIn compared to 21% in 2013, while 20% of employers used Facebook for recruitment in 2016 compared to 9% in 2013.

The survey also shows that companies use different recruitment channels for different purposes during the recruitment process. In the initial phases of recruitment, only 2% of employers used external CV-databases to identify candidates for vacant positions. In the final phases of the recruitment process, Danish companies use social media and references to check the preferred candidates.

For job-seekers, online job-portals are also the most important channel for job search. A survey from January 2017 among Danish respondents aged 18 to 65 years (1,114 respondents) conducted by "Megafon" for "Danish Media" showed that 17% of the respondents had found their current or latest job through a jobsite (OJV).

Figure 3: How did you get your current or latest job (in %)?
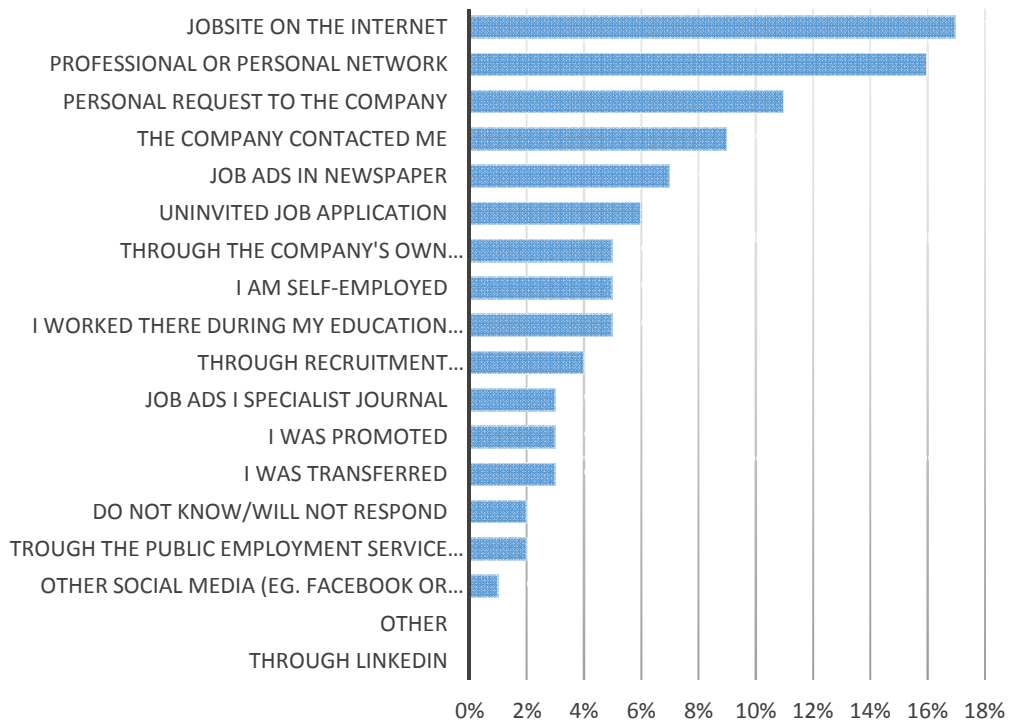
Source: Megafon for "Danish Media" (January 2017), www.jobindex.dk.

Apart from using job-portals, informal channels of job search are clearly also important on the Danish labour market. Informal channels of job search include professional and personal networks (16 %), personal request to the company (11%) and "the company contacted me" (9%).

4.1. Expected Trends in the Use of OJVs in Recruitment and Job-search

The representative from Jobindex mentioned some of the most important trends expected in online job advertising: (1) Job announcements will become more dynamic (more visual with pictures and videos). (2) Recruitment will become more data-driven and more specific (e.g. analysis of what type of wording attracts specific professions, e.g. engineers or sales assistant. (4) Response times will be shorter (e.g. from application to response, after job interviews etc.).

5. Identifying Online Job-portals for Web-crawling

Four keyword searches were conducted using the search engine, Google. The keywords in Danish and English, as well as the number of results and the top job-portals recorded in the search are shown in Table 6.

Table 6: Grid for documenting the Google search for job-portals

	Search term "jobportal"	Job-portal	**Ranking**
Search 1	Number of results per search term	3,000,000	1. Jobfinder 2. Jobindex 3. Stepstone
Search 2	Search term "jobsøgning"	Job search	1. Jobindex 2. Stepstone 3. Ofir
	Number of results per search term	429,000	
Search 3	Search term "jobannonce"	Job advert	1. Ofir 2. Stepstone 3. Jobindex
	Number of results per search term	794,000	
Search 4	Search term "jobopslag"	Job annoncement	1. Jobindex 2. Journalisten
	Number of results per search term	288,000	

Source: Bredgaard (google.dk search conducted on 28 August 2017).

The Google search shows that the Danish word "jobannonce" (job advert) returned the highest number of results and that Jobindex is the Danish job-portal that receives the most traffic via Google.

5.1. Validating the Selection of Online Job-portals

We suggest using **Jobindex.dk** for web scraping. Jobindex is the largest private online job vacancy database, and it covers all types of occupations and jobs. Jobindex also cooperates with Jobnet (the public online job database), which means that all job vacancies from Jobnet are also in the database of Jobindex. Jobindex also has cooperation agreements with other private job-portals (including Ofir). Jobindex now owns its former competitor, StepStone, but it still runs StepStone as a separate website specialised in management positions.

There should be no major obstacles to web scraping in Denmark. The representative from Jobindex was very interested in the Cedefop project and would like additional information about the

online job market in other European countries. He did not seem to have any objections to allowing Cedefop access to their database.

5.2. Conditions for Drafting and Posting OJVs in the Selected Job-portals

Jobnet.dk is the public online job-portal and is run by the PES. It is free to use by all potential job-seekers, but it is mandatory for unemployed job-seekers. All the OJVs available on Jobnet.dk are also posted on Jobindex.dk. The search criteria of Jobnet are the following:

- Geography (Five regions as well as Greenland and positions abroad);
- Type of occupation (23 different job categories);
- Category of employment (ordinary employment, suited for early retirement pensioners, suited for persons on disability benefits, flex jobs, suited for persons with disabilities, hot jobs, subsidised employment);
- Duration of employment (open-ended contract, temporary contract);
- Working hours (fulltime, part-time).

Jobindex.dk is the dominant private online job-portal. The Workflow on Jobindex.dk is as follows:

- Go to www.jobindex.dk and register as a "company user" by using an email address;
- A welcome email is sent to the email address with a link to register an account with a personal password;
- Basic information must then be provided (name, occupation, company name, address, telephone and preferred language, Danish or English);
- Then the user is directed to a personal customer page. On this page, there are four main options:
  - Make a profiled job advert (job ads with higher visibility and company logo). Prices: DKK 2,995 (approximately €400) excluding VAT (only job ad) or DKK 4,995 (€666) excl. VAT (job ad + CV match);
  - Recruitment (access to the CV database of jobseekers, Price: DKK 2,995 (€400) excl. VAT for each successful job match);
  - Employer branding (specialised services and marketing);
  - Sign up for the "job robot" (which will automatically post job ads from the company's homepage on the homepage of Jobindex as well).

There are no templates for drafting the job ad. Jobindex will load the job ad into their database and make it visible on their homepage (visibility depends on the product purchased by the customer). The typical structure of a job ad is the job title and company name in the heading, followed by the required qualifications and a job description, the deadline for application and contact information. Jobindex QuickApply is a system for handling job applications (overview of all applications, confirm reception of application, assessment of candidates, announce job interview, send rejection etc.).

On Jobindex.dk, there are three search options: (1) job category and sub categories (see Table 7), (2) company name, (3) date of posting (1-30 days).

Table 7: Search options

Job category	Sub category	Job titles (examples)
Information tech-nology	Database IT-maintenance and support IT-courses for unemployed IT-management Internet and WWW System developers and programming Tele- and data communication Economy and company systems	Personal data manager IT supporter Jobindex E-learning courses IT-manager or project management Web designer/webmaster Programmer, software engineer Tele technician BI, SAP, Navision consultant
Engineering and technicians	Buildings and construction Electro technic Chemistry and bio Management positions Machines Medico and foodstuff Production and process technic	Buildings engineer, architect, plumber Electro mechanic Chemist, environmental engineer Managers Mechanical engineer and operator Pharmacist, pharmacologist Ship engineer, export engineer
Management and HR	Freelance consultant HR and management courses for unem-ployed IT-management Institution and school management Management Management in engineering and technic HR and personnel Project management Sales management Top and board management Economic management	Freelance consultant Jobindex E-learning courses IT-managers and project management Headmasters, deputy manager, nursery manager Manager, deputy director Mangers HR-consultant, personnel manager Project manager Sales manager CEO, managing director Business manager, chief accountant
Trade and ser-vices	Messenger and delivery Childcare Retail Property service Hairdresser and personal care Hotels, restaurants and kitchen Cleaning Service Security	Postman, paperboy, bike messenger Au Pair, nanny, day nurse Cash assistant, shop assistant Superintendent, grounds man Hairdresser, cosmetologist Kitchen staff, waiter, receptionist Cleaning assistant, window cleaner Customer service, laundries Watchman, lifeguard, fireman, prison guard
Industry and craftsmanship	Sheet metal and tubes Buildings and construction Electrician Industrial production Iron and metal Warehouses Agriculture, forestry and fishing Painting and surface treatment Mechanics and auto Nutrition and food Textiles and handicrafts Transport Wood and furniture Carpeting	Plumber, tube fitter Bricklayer, masons, concrete Electrician Supervisor, factory worker Blacksmith, welder Spare parts assistant, packaging Gardener, agronomist, veterinarian Painter, lacquering Motor mechanic, car painter, car workshop Dairyman, butcher, baker Upholsterer, goldsmith, decorator, florist Driver, captain, remover Woodcutting machinist, cabinet maker Roofer, fitter, glazier
Sales and com-munication	Design and fashioning Real estate Franchise Graphics Communication and journalism Culture and church Marketing Sales Sales and communication courses for unemployed Sales management	Interior designer, clothing designer Real estate agent Franchise Printer, typographer, bookbinder Information officer, journalist, editor Priest, custodian Advertising assistant, campaign consultant Account manager, media consultant Jobindex E-learning courses Sales manager

	Tele marketing	Phoner, tele sales
Education	Libraries Research Institution and school management Teacher Pedagogue Adult education	Librarian, archivist Professor, Ph.D.-student, researcher Headmasters, deputy manager, nursery Teacher Pedagogue, nursery nurse, child and youth worker Teacher, counsellor,
Office and economy	Real Estate Property service Finance and insurance Shopping and procurement Law Office Office and economy courses for unemployed Office trainee Logistics and freighting Public administration Translation and language Secretary and reception Economy and accounting Financial management	Real estate agent Superintendent, janitor, caretaker Customer advisor, bank advisor, insurance broker Buyer, purchasing agent, procurement officer Lawyer, legal advisor, jurist Office assistant, academic worker Jobindex E-learning courses Office trainees, business trainees Shipping agent, exports assistant Public employment officer, case worker Interpreter, translator, correspondent Secretary, receptionist, switchboard assistant Accountant, controller, auditor, economist CEO, financial director
Social and health	Doctor Secretaries Public administration Care Psychology and psychiatry Social administration Nurses and midwifes Dentists and clinical personnel Technical healthcare Therapy and rehabilitation	Doctor GP secretary, medical secretary Public employment officer, case worker Social and health care worker, home career Psychologist, psychiatrist Social advisor, family counsellor Nurse, midwife Dentist, dental therapist, dental assistant Radiographer, audiologist, hospital porter Occupational therapist, physiotherapist,
Additional positions	Apprenticeships, voluntary work, study jobs, study apprenticeships,	

Source: Bredgaard (2017).

5.3. Contacting the Online Job-portal Owners

I have not contacted the Danish job-portal owners to ask for permission to do web crawling and would prefer if Cedefop, IWAK or CRISP would contact the job-portal owners, since they have the expertise and can reply to any specific questions that the portal owners may have. I will assist in finding the right contact persons in the organisations.

6. Format and Content of OJVs

6.1.   Legal/Regulatory Framework

See Section 3.1.

6.2.   Format of OJVs

As mentioned in WP1, the legal framework for employer's use of OJVs in Denmark is limited and mainly relates to avoiding using discriminatory language when drafting OJVs. OJVs are widely used by all types of employers, occupations and jobs. As mentioned in WP1, there are some occupational differences. Employers recruiting unskilled labour or labour in the building and construction industry traditionally prefer to use informal channels for recruitment (e.g. recommendations from employees or business partners, personal contacts) while management jobs and jobs requiring higher skill levels are usually posted on job-portals. Larger companies are also more likely to use OJVs than small companies, since it requires some administrative capacity to write the job advert, upload it on an OJV and select the most suitable candidate. The majority of Danish online job-portals are general across occupations and job types, but there are a few specialised online job-portals, such as "StepStone" (owned by Jobindex), that mediate executive and management jobs.

It is difficult to generalise across the variations in the structure and content of OJVs. Nevertheless, a "typical" OJV often contains the following items:
- Job title/position and company name;
- Competencies and qualifications required by the job applicant;
- Information about the workplace and the company (including sometimes wage and working conditions);
- Practical details: Contact information of company representative, deadline for application etc.

Competencies and qualifications requested in OJVs both refer to formal qualifications (specific educational background) as well as 'informal'/'soft' competencies. OJVs often have references to personality traits and personal competencies, such as flexibility, assertiveness, adaptability, good spirit, customer friendliness, etc.). However, as the expert respondent of Jobindex explained in the interview, this type of information is difficult to measure and evaluate, as it tends to be more cliché than factual, which is not very useful for selecting the right candidate. Therefore, Jobindex recommends that their clients (employers) are specific and concrete about the actual job tasks and duties. Despite this recommendation, Jobindex offers personality tests to job-seekers on their homepage, demonstrating that personality traits still play an important role in the recruitment process. In their personality test, Jobindex distinguishes between the following traits: (1) introvert vs. extrovert, (2) facts vs. intuition, (3) analysis vs. feelings and (4) judgement vs. perception. In total, the portal identifies 16 different personality types.

There are no scientific studies available about the role competencies and personality traits play in OJVs and recruitment in Denmark. A study done by the trade union representing the semi-profession of "pedagogues" used data from Jobindex.dk to analyse the word choice used in OJVs for the occupation "pedagogue". This occupation generally requires 3 1/2 years of University edu-

cation, resulting in jobs with public sector employers in nurseries, kindergartens, schools, etc. The study indicated that personality traits were also important parts of these OJVs. The study analysed and classified adjectives used in 3,552 OJVs in Jobindex for pedagogues and came up with the following top five traits: cooperative (mentioned 6,420 times), engaged (mentioned 4,013 times), appreciative (mentioned 2,372), responsible (mentioned 2,133) and experienced (mentioned 1,925). While these findings cannot be generalised across the Danish labour market, and it is clear that positions as pedagogues require "soft skills", the study gives a sense of the importance of listing personality traits in OJVs.[9]

6.3.   Content of OJVs

See Section 6.2.; additional requested information is not available.

6.4.   Main Differences between the Public and Private Online Job-portals

The public job-portal has to advertise specific positions, while the private job-portals may announce general roles within a company, regardless of whether or not a specific vacancy is open at that time. However, the majority of job announcements on private portals also represent legitimate vacancies.

6.5.   Expected Trends in the Format and Content of OJVs

See Section 4.1. Information related to additional trends is not available.

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[9] The data covers the period 2010-2015 and were drawn from Jobindex.dk by the Trade Union for "pedagogues" (BUPL)

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Expert Interviews

Name of organisation	Type of organisation	Expert's position	Interview date
Statistics Denmark (National Statistical Office)	Government	Head of Department	4 July 2017
Danske Erhverv (The Confederation of Danish Enterprises)	Employers' association and network for the service industry	Head of Department	2 August 2017
The largest Danish private online job-portal	Labour market intermediary (private)	Head of Recruitment	2 August 2017
The Danish Agency for Labour Market and Recruitment (STAR) under the Ministry of Employment	PES/Government	Special consultant	7 August 2017